

PATENT COOPERATION TREATY

PCT

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

WUYTS, Koenraad Maria
KONINKLIJKE KPN N.V.
P.O. Box 95321
NL-2509 CH Den Haag
PAYS-BAS

NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

Date of mailing
(day/month/year)

0 2. 11. 00

Applicant's or agent's file reference

./ . 402570 WO

IMPORTANT NOTIFICATION

International application No.

PCT/EP 00/03096

International filing date (day/month/year)

07/04/2000

Priority date (day/month/year)

07/05/1999

Applicant

KONINKLIJKE KPN N.V.

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

25/09/2000

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
- ☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
- ☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/404), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the *PCT Applicant's Guide*, Volume II.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/

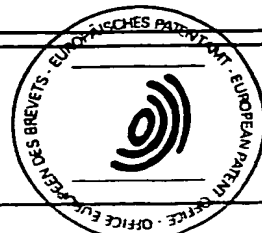


European Patent Office
D-80298 Munich
Tel. (+49-89) 2399-0, Tx: 523656 epmu d
Fax: (+49-89) 2399-4465

Authorized officer

TREUILLET A C

Tel. (+49-89) 2399-8861



PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

402570W0

Box No. I TITLE OF INVENTION

Communications system having roaming facilities.

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

KONINKLIJKE KPN N.V.
Stationsplein 7
9726 AE GRONINGEN
The Netherlands

☐ This person is also inventor.

Telephone No.

+31 70 3323678

Facsimile No.

+31 70 3323840

Teleprinter No.

State (that is, country) of nationality:

NL

State (that is, country) of residence:

NL

This person is applicant
for the purposes of:

☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NAS Deborah Nicole
Dr. Kuyperlaan 233
3118 RP SCHIEDAM
The Netherlands

This person is:

☐ applicant only.

☒ applicant and inventor

☐ inventor only (If this check-box
is marked, do not fill in below.)

State (that is, country) of nationality:

NL

State (that is, country) of residence:

NL

This person is applicant
for the purposes of:

☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

KRUK, Wiggert Johan
KONINKLIJKE KPN N.V.
P.O. BOX 95321
2509 CH THE HAGUE
The Netherlands

Telephone No.

+31 70 3323678

Facsimile No.

+31 70 3323840

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

KAZEM Mohammed Ismael
Gevers Deynootweg 960
2586 BW DEN HAAG
The Netherlands

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

NL

State (that is, country) of residence:

NL

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|---|---|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☐
- ☐

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit)

Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed.

2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.



NAS
Deborah Nicole

Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed.

2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.

KAZEM
Mohammed Ismael

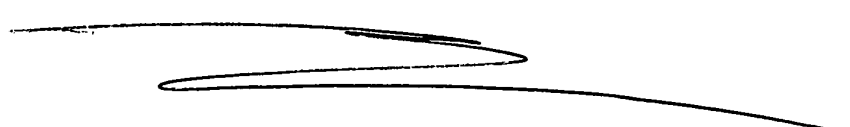
Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) (07.05.99) 7 MAY 1999	1011987	NL		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY			
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):	
Date (day/month/year) Number Country (or regional Office)			
ISA / EP		20 DEC 1999 SN33133NL NL	

Box No. VIII CHECK LIST; LANGUAGE OF FILING	
This international application contains the following number of sheets: request : 6 description (excluding sequence listing part) : 5 claims : 1 abstract : 1 drawings : 3 sequence listing part of description : Total number of sheets : 16	This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 21396 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input checked="" type="checkbox"/> other (specify): search report
Figure of the drawings which should accompany the abstract: 2	Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).	
 KRUK, Wiggert Johan	

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only
Date of receipt of the record copy by the International Bureau:

PCT

FEE CALCULATION SHEET Annex to the Request

For receiving Office use only

International application No.

Date stamp of the receiving Office

Applicant's or agent's
file reference

402570W0

Applicant

Koninklijke KPN N.V.

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE EUR 102 T

2. SEARCH FEE EUR 945 S

International search to be carried out by

(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains 16 sheets.

first 30 sheets EUR 409 b1

remaining sheets x additional amount = b2

Add amounts entered at b1 and b2 and enter total at B EUR 409 B

Designation Fees

The international application contains 77 designations.

10 x 88 = EUR 880 D

number of designation fees payable (maximum 8) amount of designation fee

Add amounts entered at B and D and enter total at I EUR 1289 I

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) P

5. TOTAL FEES PAYABLE EUR 2336

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

☐ The designation fees are not paid at this time.

MODE OF PAYMENT

☒ authorization to charge
deposit account (see below)

☐ bank draft

☐ coupons

☐ cheque

☐ cash

☐ other (specify):

☐ postal money order

☐ revenue stamps

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ EP ☒ is hereby authorized to charge the total fees indicated above to my deposit account.

☒ (this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

☒ is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

28090011
Deposit Account No.

6 April 2000
Date (day/month/year)

KRUK, Wiggert Johan
Signature Professional Representative

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ EP

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only		
Identification of IPEA		Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference
International application No. PCT/EP 00/03096	International filing date (day/month/year) 07/04/200	(Earliest) Priority date (day/month/year) 07/05/1999
Title of invention Communications system having roaming facilities.		
Box No. II APPLICANT(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) Koninklijke KPN N.V. 7 Stationsplein 9726 AE GRONINGEN The Netherlands		Telephone No.: +31 70 3323678
		Facsimile No.: +31 70 3323840
		Teleprinter No.:
State (that is, country) of nationality: NL		State (that is, country) of residence: NL
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) NAS, Deborah Nicole Dr. Kuyperlaan 233 3118 RP SCHIEDAM The Netherlands		
State (that is, country) of nationality: NL		State (that is, country) of residence: NL
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) KAZEM, Mohammed Ismael Gevers Deynootweg 960 2586 BW DEN HAAG The Netherlands		
State (that is, country) of nationality: NL		State (that is, country) of residence: NL
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.		

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☐ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☒ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*WUYTS, Koenraad Maria
Koninklijke KPN N.V.
P.O. Box 95321
2509 CH THE HAGUE
The Netherlands

Telephone No.:

+31 70 3323678

Facsimile No.:

+31 70 3323840

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filedthe description ☒ as originally filed☐ as amended under Article 34the claims ☒ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☒ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

For International Preliminary
Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> separate signed power of attorney | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input type="checkbox"/> other (<i>specify</i>): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).


Koenraad Maria WUYTS
Professional Representative

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

International application No. PCT/EP 00/03096	For International Preliminary Examining Authority use only	
Applicant's or agent's file reference 402570WO	Date stamp of the IPEA	
Applicant Koninklijke KPN N.V.		
Calculation of prescribed fees		
1. Preliminary examination fee	EUR 1533	P
2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>)	EUR 147	H
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	EUR 1680	
TOTAL		
Mode of Payment		
<input checked="" type="checkbox"/> authorization to charge deposit account with the IPEA (see below)	<input type="checkbox"/> cash	
<input type="checkbox"/> cheque	<input type="checkbox"/> revenue stamps	
<input type="checkbox"/> postal money order	<input type="checkbox"/> coupons	
<input type="checkbox"/> bank draft	<input type="checkbox"/> other (<i>specify</i>):	
Deposit Account Authorization (<i>this mode of payment may not be available at all IPEAs</i>)		
The IPEA/ EP <input checked="" type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.		
<input checked="" type="checkbox"/> (<i>this check-box may be marked only if the conditions for deposit accounts of the IPEA so permit</i>) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.		
28090011	22 September 2000	
Deposit Account Number	Date (day/month/year)	Signature WUYTS, Koenraad Maria

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

WUYTS, Koenraad Maria
KONINKLIJKE KPN N.V.
P.O. Box 95321
NL-2509 CH Den Haag
PAYS-BAS

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

07.06.2001

Applicant's or agent's file reference

J. 402570 WJ

IMPORTANT NOTIFICATION

International application No.
PCT/EP00/03096

International filing date (day/month/year)
07/04/2000

Priority date (day/month/year)
07/05/1999

Applicant

KONINKLIJKE KPN N.V.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Finnie, A

Tel. +49 89 2399-8251



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <i>J.</i>	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/03096	International filing date (<i>day/month/year</i>) 07/04/2000	Priority date (<i>day/month/year</i>) 07/05/1999
International Patent Classification (IPC) or national classification and IPC H04Q7/38		
Applicant KONINKLIJKE KPN N.V.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 25/09/2000	Date of completion of this report 07.06.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Hodgins, W Telephone No. +49 89 2399 8987 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03096

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

3-5	as originally filed	
1,2	with telefax of	16/03/2001

Claims, No.:

1-4	with telefax of	16/03/2001
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Drawings, sheets:

1/3-3/3	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03096

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:
see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-4
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-4
Industrial applicability (IA)	Yes:	Claims	1-4
	No:	Claims	

- 2. Citations and explanations**
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Concerning Point I

Newly filed pages 1 and 2 of the description don't "match up" with originally filed page 3.

Concerning Point V

- 1) The following documents are cited:
D1: WO 97 36447 A (COLLINS AUGUSTINE ;CUNNINGHAM JOSEPH (IE);
DILLON AIDAN (IE); MARK) 2 October 1997 (1997-10-02)
D2: GB-A-2 322 998 (VODAFONE LTD) 9 September 1998 (1998-09-09)
D3: EP-A-0 512 962 (ERICSSON TELEFON AB L M) 11 November 1992 (1992-11-11)
D4: EP-A-0 909 104 (ASCOM BUSINESS SYSTEMS AG) 14 April 1999 (1999-04-14)
D5: EP-A-0 048 868 (SIEMENS AG) 7 April 1982 (1982-04-07)
- 2) A communication system as per the pre-characterizing part of claim 1 is known from (for example) D1 or D2 (cf in particular the first figures of said documents).

The characterising features of claim 1 that "the roaming means are formed by a terrestrial interconnection network, which interconnection network is connected with said several communications networks" are known from D2 (the "International Roaming Platform" 30; see also corresponding parts of description). In this respect it is pointed out that the combination of links 32, 38, 40, 44, gateways 34, 36, 42 and 46 and IRP 30 are to be viewed as an "interconnection network".

The remaining feature of the characterizing part of claim 1 is that the terrestrial interconnection network interconnects "ground stations of a worldwide satellite communications network".

This feature is not explicitly known from D2, thus the novelty (and industrial applicability) of the claims is acknowledged.

With respect to this feature, however, it is noted that it is unclear from the description (let alone the claims) of the current application whether the satellites are actually used for anything (eg transferring roaming data), or whether merely the network comprising the base stations are used for transferring the data.

If it is the latter, then the fact that the means forming the interconnection network are connected to satellite means is irrelevant. What is important is merely that there is a roaming network to which the different communications networks are (for roaming purposes) connected, which is what is described in D2.

If it is the former, then this is what is taught by D1 (cf in particular figure 1 and related parts of description). D1 shows the RIG (Roaming Interworking Gateway) communicating via satellite means (3) for roaming purposes. It is in any case pointed out (cf claim 7 and last paragraph of page 19 of D2) that the use of satellite links for data transfer in mobile communication systems is generally known in the art. It would thus be obvious to the skilled man to use them for transferring roaming data.

In either case, from the starting point of D2 (and, if necessary, taking the teachings of D1 into account), the skilled man would arrive at the subject matter of claim 1 without performing an inventive step. Claim 1 thus fails to meet the requirements of Articles 33(1) and (3) PCT.

- 3) The additional features of dependent claim 2 are known from D1 (cf figure 1).

The additional feature of dependent claim 2 are obvious in the light of D3.

Use of a SIM (cf claim 3) is general in the field of mobile communications (cf also D2 page 5 2nd paragraph or D5, figure).

The additional features of claim 4 are known from D5 (cf passages cited in search report).

Dependent claims 2 - 4 thus add nothing inventive within the meaning of Articles 33(1) and (3) PCT to claim 1.

Concerning Point VIII

- 1) The Summary of the Invention on page 1 (lines 26 - 37) of the description adds information about the advantages and concepts of the current invention that are not contained in the originally filed application. In particular the sentence "The invention is based on the inventive understanding that, ... and thus enable roaming facilities" sets out implied advantages not derivable from the originally filed application documents. Accordingly, these amendments cause the application to contravene Article 34(2)(b) PCT with regard to added subject matter.
- 2) Rule 5.1(b) PCT states that (generally) the order specified in paragraph 5.1(a) PCT shall be followed.

For no apparent reason, in the current application the part of the description according to Rule 5.1(a)(ii) follows the part according to Rule 5.1(a)(iii). Moreover, the part according to Rule 5.1(a)(iv) is missing. Accordingly, these requirements of the PCT are not met.

Communications system having roaming facilities.**BACKGROUND OF THE INVENTION**

5 The invention relates to a communications system, comprising several communications networks, and means for facilitating roaming for users on said several communications networks.

10 It is known that PLMN operators [PLMN = Public Land Mobile Network] mutually conclude roaming agreements. Such agreements, which regulate that subscribers of one PLMN may, and can, make use of another PLMN (this is called roaming) so far must always be gone into bilaterally between the several PLMN operators mutually. In addition, technical provisions which make all this possible, such as coupling network signalings, must be undertaken bilaterally. In this manner, roaming additionally is possible only between different PLMNs, but not between PLMNs and PSTNs (= Public Switched Telephone Networks).

SUMMARY OF THE INVENTION

20 It is the object of the invention to overcome said drawbacks. To this end, the invention provides for operators of telecommunications networks, i.e., PLMNs or PSTNs, to each conclude a bilateral roaming agreement with a global terrestrial interconnection network, actually only, or at least primarily installed for the interconnection of groundstations of a worldwide satellitecommunications network (= SCN) The invention is based on the inventive understanding that, although said ground station interconnection network actually is set up for the interconnection of ground stations all over the world, said interconnection network is also useable and even -after some rather minor system adaptations- fit for interconnecting local or national networks and thus enabling roaming facilities. In doing so the technical means are provided for realising said roaming agreements. By way of only one agreement, namely, by the SCN, each PLMN or PSTN, as the case may be, receives roaming facilities with all other PLMNs and PSTNs which have also concluded such an agreement with the SCN. The

telecommunications network concluding an agreement with the SCN should, for the purpose of realising said agreement, bring about a signalling coupling with the SCN. The SCN then provides signalling links with all
5 telecommunications networks with which a roaming agreement has been concluded as well. There is therefore required only one signalling link with the SCN to obtain roaming with all networks connected to the SCN. The invention is based on the insight that an SCN, apart from as a platform
10 for satellite communication, due to its far-reaching global setup and arrangement, is extremely suitable as a roaming platform ("facilitator") for different PLMNs and PSTNs.

It is noted that WO9736447 discloses a roaming
15 interworking gateway for mobile telecommunications systems. In the known system no use is made of a (global) terrestrial network for the interconnection of satellite ground stations. The understanding of our present invention is to make use, for interconnecting and roaming-
20 enabling of local networks, of an already existing, worldwide network which, however, until the present invention, served as a global interconnection network for only satellite ground stations. So, according to the invention, said network is additionally used for the
25 interconnection of local telecommunications networks which, as such, have nothing to do with satellite communication.

IMPLEMENTATION

30 Below, the invention will be further explained by reference to several figures.

A calling user of a mobile terminal has a SIM card (SIM = Secure Identification Module) in which there is programmed an IMSI (= International Mobile Subscriber
35 Identity). The IMSI consists of 15 positions, the first three of which standard denote the country of origin of the Network Operator (= NO) of the mobile user, the fourth and fifth denote the NO of the mobile user and the remaining ten positions may be freely completed by the NO.
40 In the IMSI of users of an NO who - according to the invention - has concluded an agreement with the SCN, the

AMENDED SHEET

CLAIMS

1. Communications system, comprising several communications networks, and roaming means for facilitating roaming to users on said several
5 communications networks, CHARACTERISED IN THAT the roaming means are formed by a terrestrial interconnection network, interconnecting groundstations of a worldwide satellite-communications network (SCN), which interconnection network is connected with said several communications
10 networks (PLMN, PSTN).

2. Communications system according to claim 1, CHARACTERISED IN THAT said interconnection network (SCN) comprises means for assigning, said communications networks (PLMN, PSTN), a code (VNO) and for entering it,
15 under control of a control module (CTR), into a register (VCR), said interconnection network, under control of the control module, realising mutual roaming facilities to subscribers of each of said communications networks entered into the register.

3. Communications system according to claim 2, CHARACTERISED IN THAT terminals of the subscribers to the communications networks (PLMN, PSTN) comprise an
20 identification module (SIM) for reading in and passing on, to the communications system, identification codes (IMSI), a code (VNO) among them which corresponds to the code entered into the register (VCR).

4. Communications system according to claim 2, CHARACTERISED IN THAT said interconnection network (SCN) determines the location of a roaming user on a wireline
30 network (PSTN) on the basis of the A-number of the terminal to which the terminal on the network is connected.

3/PRK
Communications system having roaming facilities. **ART 34 AMDT**BACKGROUND OF THE INVENTION

5 The invention relates to a communications system, comprising several communications networks, and means for facilitating roaming for users on said several communications networks.

10 It is known that PLMN operators [PLMN = Public Land Mobile Network] mutually conclude roaming agreements. Such agreements, which regulate that subscribers of one PLMN may, and can, make use of another PLMN (this is called roaming) so far must always be gone into bilaterally between the several PLMN operators mutually. In addition, technical provisions which make all this possible, such as coupling network signalings, must be undertaken bilaterally. In this manner, roaming additionally is possible only between different PLMNs, but not between PLMNs and PSTNs (= Public Switched Telephone Networks).

SUMMARY OF THE INVENTION

20 It is the object of the invention to overcome said drawbacks. To this end, the invention provides for operators of telecommunications networks, i.e., PLMNs or PSTNs, to each conclude a bilateral roaming agreement with a global terrestrial interconnection network, actually only, or at least primarily installed for the interconnection of groundstations of a worldwide satellitecommunications network (= SCN) The invention is based on the inventive understanding that, although said ground station interconnection network actually is set up for the interconnection of ground stations all over the world, said interconnection network is also useable and even -after some rather minor system adaptations- fit for interconnecting local or national networks and thus enabling roaming facilities. In doing so the technical means are provided for realising said roaming agreements. By way of only one agreement, namely, by the SCN, each PLMN or PSTN, as the case may be, receives roaming facilities with all other PLMNs and PSTNs which have also concluded such an agreement with the SCN. The

telecommunications network concluding an agreement with the SCN should, for the purpose of realising said agreement, bring about a signalling coupling with the SCN. The SCN then provides signalling links with all telecommunications networks with which a roaming agreement has been concluded as well. There is therefore required only one signalling link with the SCN to obtain roaming with all networks connected to the SCN. The invention is based on the insight that an SCN, apart from as a platform for satellite communication, due to its far-reaching global setup and arrangement, is extremely suitable as a roaming platform ("facilitator") for different PLMNs and PSTNs.

It is noted that WO9736447 discloses a roaming interworking gateway for mobile telecommunications systems. In the known system no use is made of a (global) terrestrial network for the interconnection of satellite ground stations. The understanding of our present invention is to make use, for interconnecting and roaming-enabling of local networks, of an already existing, worldwide network which, however, until the present invention, served as a global interconnection network for only satellite ground stations. So, according to the invention, said network is additionally used for the interconnection of local telecommunications networks which, as such, have nothing to do with satellite communication.

IMPLEMENTATION

Below, the invention will be further explained by reference to several figures.

A calling user of a mobile terminal has a SIM card (SIM = Secure Identification Module) in which there is programmed an IMSI (= International Mobile Subscriber Identity). The IMSI consists of 15 positions, the first three of which standard denote the country of origin of the Network Operator (= NO) of the mobile user, the fourth and fifth denote the NO of the mobile user and the remaining ten positions may be freely completed by the NO. In the IMSI of users of an NO who - according to the invention - has concluded an agreement with the SCN, the

first (three) digits of the field to be freely completed constitute a VNO code (VNO = Virtual Network Operator). Said VNO code is assigned, by a control module of the SCN, to each PLMN or PSTN with which the SCN, as may be seen from an entry into a VNO-code register (= VCR), has concluded a bilateral roaming agreement. It should be noted that a VNO is understood to mean an organisation managing a communications system having one or more network working elements (e.g., an HLR [= Home Location Register]) with which the VNO may add value to a base telecommunications service. In doing so, the VNO disposes, or not, of its own network (PLMN or PSTN).

PLMN subscribers roaming on a guest PLMN

When a (calling) user switches on his mobile terminal, a link is established between the mobile terminal and a VNO base station (in this case a PLMN) where the user wants to roam. In this case, the mobile terminal transmits the IMSI number of the SIM. The VNO network attempts to analyse at least the first 8 positions, in order to determine whether it concerns a home user (client of the own PLMN) or a roaming user (client of another PLMN). If analysis on the first 8 positions is impossible, or it concerns a roaming user, it is determined, on the basis of the first 5 positions, whether a roaming agreement has been concluded between the PLMN and the SCN. If, according to the contents of the VCR, a roaming agreement does indeed exist, a request for information on the user is placed, by way of signalling, with the SCN, which carries out an analysis on the VNO code to determine to which VNO the request must be passed on. The VNO will make available the requested information, by way of signalling, to the satellite network, which passes it on to the guest PLMN. If the calling user is accepted by the guest PLMN, said information will be stored in the home PLMN in a Home Location Register (= HLR) and in the guest PLMN in a Visiting Location Register (= VLR). The costs of the communication by way of the PLMN are charged to the calling user by the home network.

Said procedures are in agreement with the current procedures laid down for roaming, and both said procedures and the means serving to carry them out are generally known.

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Roaming on nonmobile networks

A nonmobile network (PSTN) may also facilitate roaming of mobile users or clients of another PSTN, provided that said PSTN is extended with the option of being capable of identifying and recording users; to this end, it should dispose of several network elements, such as HLR, VLR, Authentication Centre, Extended memory. Identification is effected by means of the IMSI on a SIM card and peripheral equipment made suitable for this purpose in the PSTN or a cordless-identification option.

15

PLMN- or PSTN-subscriber roaming on a PSTN

If a calling user ends up within the range of a transceiver station connected to a PSTN of a cordless system (e.g., a DECT [= Digital Enhanced Cordless Telecommunications]) and he disposes of a set wherein cordless communication is possible, he may make use of communication by way of the PSTN. Identification and communication between the PSTN and the SCN, and between the SCN and the home PLMN, is effected in accordance with the description above. The costs of the communication by way of the PSTN are charged to the calling user by the home network.

20

25

Due to the absence of a base station which determines the location of the roaming user (such as in the PLMN), the location of the roaming user on the PSTN is determined on the basis of the Anumber (country code + network code + subscriber number) of the terminal to which the cordless transceiver station is connected. The user is accessible on the PSTN by way of his own (mobile) telephone number.

30

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PSTN subscribers roaming on a PLMN or PSTN

Wireline terminals may also make use of the aforementioned facilities. The terminal of a calling user does have to be provided with a SIM card identical to a SIM card for mobile terminals in PLMN networks. When the SIM card is inserted into a (public) terminal suitable for

40

that purpose, identification and communication between the PSTN and the SCN, and between the SCN and the home PLMN or home PSTN, take place in accordance with the procedure described above. Due to the absence of a base station which determines the location of the roaming user (such as in the PLMN), the location of the roaming user on the PSTN is determined on the basis of the A number (country code + network code + subscriber number) of the terminal to which the (public) terminal is connected. The user is accessible on the wireline set (PSTN) by way of his own (mobile) telephone number.

The costs of the communication by way of the PSTN are charged to the calling user by the home PSTN or home PLMN.

The enclosed figures provide an illustration of the invention. FIG. 1 shows the state of the art, in which several PLMNs conclude agreements with one another, and establish signalling channels and control modules for realising roaming facilities for the subscribers of said several PLMNs. FIG. 2 shows the architecture according to the invention, PLMNs and also PSTNs realising roaming facilities by way of a Satellite-Communications Network (= SCN) which is used here as a common roaming platform (facilitator). FIG. 3 shows a further elaboration of FIG. 2. An SCN connects several Land Earth Stations (= LESs) to one another. These are the earth stations for satellite communication. The satellites with which said earth stations are communicating have not been drawn since said satellites per se have no function in the system according to the present invention. In conformity with the invention, the SCN - apart from the standard function of facilitating communication by way of satellites - accomplishes the function of facilitating roaming for subscribers who have entirely different operator networks, PSTNs and PLMNs, as their home network, in other words, to which they are subscribing. In conformity with the invention, operators of different PLMNs or PSTNs each conclude a bilateral roaming agreement with the SCN. The technical means for realising said agreements between the several PLMNs and PSTNs, respectively, and the SCN, comprise a register, the Virtual Network Operator Code

Register VCR, which is located within the SCN, and may be approached under control of a control module CTR.

The VCR may consist of one register, which may be approached and interrogated by the several LESs; if so
5 desired, each LES may be provided with a copy VCR - to be continuously kept up to date - having (distributed) control means (CTRs). By way of one agreement with the SCN, technically to be realised by assigning, to the PLMN or PSTN, a VNO code (= VNC) and entering said VNC into the
10 VCR, each PLMN or PSTN, respectively, entered into the VCR obtains roaming facilities with all other PLMNs and PSTNs entered into the VCR. Upon entry into the VCR, there is also realised - under control of the control module CTR - a signalling coupling (interface) between the PLMN and
15 PSTN entered, respectively, and the SCN. By way of the SCN, all entered PLMNs and PSTNs are then capable of exchanging signalling traffic - in this case, roaming information - with one another. This way, the SCN is used, apart from as a platform for satellite
20 communication, by way of the VCR and the signalling couplings corresponding thereto, as an interworking platform for facilitating roaming between the several PLMNs and PSTNs.

As indicated above, the system proposed by the
25 invention makes use of SIM cards having an IMSI adjusted for roaming. Such a SIM card is shown in FIG. 4. Standard are the country and operator codes, five characters in all. The ten remaining character positions not laid down in standards, are used in the system
30 according to the invention for laying down, inter alia, the VNO code (three characters) of the home PLMN or PSTN, respectively.

CLAIMS

1. Communications system, comprising several communications networks, and roaming means for facilitating roaming to users on said several
5 communications networks, CHARACTERISED IN THAT the roaming means are formed by a terrestrial interconnection network, interconnecting groundstations of a worldwide satellite-communications network (SCN), which interconnection network is connected with said several communications
10 networks (PLMN, PSTN).
2. Communications system according to claim 1, CHARACTERISED IN THAT said interconnection network (SCN) comprises means for assigning, said communications networks (PLMN, PSTN), a code (VNO) and for entering it,
15 under control of a control module (CTR), into a register (VCR), said interconnection network, under control of the control module, realising mutual roaming facilities to subscribers of each of said communications networks entered into the register.
- 20 3. Communications system according to claim 2, CHARACTERISED IN THAT terminals of the subscribers to the communications networks (PLMN, PSTN) comprise an identification module (SIM) for reading in and passing on, to the communications system, identification codes (IMSI),
25 a code (VNO) among them which corresponds to the code entered into the register (VCR).
4. Communications system according to claim 2, CHARACTERISED IN THAT said interconnection network (SCN) determines the location of a roaming user on a wireline
30 network (PSTN) on the basis of the A-number of the terminal to which the terminal on the network is connected.

ABSTRACT

Communications system, comprising several communications networks, and roaming means for
5 facilitating roaming of users on said several communications networks. The roaming means are formed by a worldwide (satellite-)communications network (SCN), which is in connection with each of said several communications networks (PLMN, PSTN). The satellite-
10 communications network (SCN) assigns a code (VNO) to each of said several communications networks (PLMN, PSTN) and enters, under control of a control module (CTR) into a register (VCR), the satellite-communications network, under control of the control module, realising mutual
15 roaming facilities to subscribers of each of said entered communications networks. The terminals of the subscribers of the communications networks (PLMN, PSTN) comprise an identification module (SIM) for reading in and passing on identification codes (IMSI), a code (VNO) among them which
20 corresponds to the code (VNO) entered into the register (VCR).



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(71) Applicant (for all designated States except US): KONINKLIJKE KPN N.V. [NL/NL]; Stationsplein 7, NL-9726 AE Groningen (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): NAS, Deborah, Nicole [NL/NL]; Dr. Kuyperslaan 233, NL-3188 RP Schiedam (NL). KAZEM, Mohammed, Ismael [NL/NL]; Gevers Deynootweg 960, NL-2586 BW Den Haag (NL).

(74) Agent: KRUK, Wiggert, Johan; Koninklijke KPN N.V., P.O. Box 95321, NL-2509 CH The Hague (NL).

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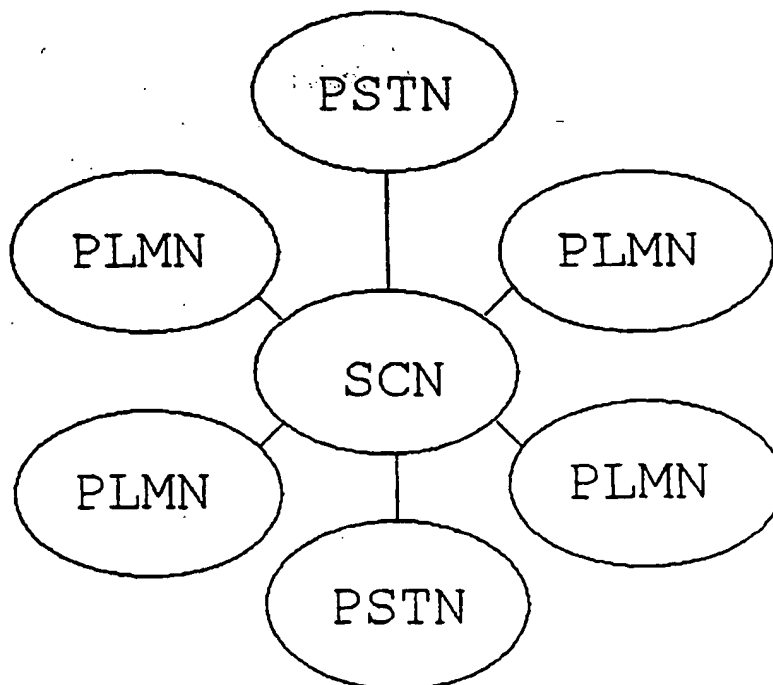
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(54) Title: COMMUNICATIONS SYSTEM HAVING ROAMING FACILITIES

(57) Abstract

Communications system, comprising several communications networks, and roaming means for facilitating roaming of users on said several communications networks. The roaming means are formed by a worldwide (satellite-) communications network (SCN), which is in connection with each of said several communications networks (PLMN, PSTN). The satellite-communications network (SCN) assigns a code (VNO) to each of said several communications networks (PLMN, PSTN) and enters, under control of a control module (CTR) into a register (VCR), the satellite-communications network, under control of the control module, realising mutual roaming facilities to subscribers of each of said entered communications networks. The terminals of the subscribers of the communications networks (PLMN, PSTN) comprise an identification module (SIM) for reading in and passing on identification codes (IMSI), a code (VNO) among them which corresponds to the code (VNO) entered into the register (VCR).



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Communications system having roaming facilities.

BACKGROUND OF THE INVENTION

5 The invention relates to a communications system, comprising several communications networks, and means for facilitating roaming for users on said several communications networks.

10 It is known that PLMN operators [PLMN = Public Land Mobile Network] mutually conclude roaming agreements. Such agreements, which regulate that subscribers of one PLMN may, and can, make use of another PLMN (this is called roaming) so far must always be gone into bilaterally between the several PLMN operators mutually. In addition, technical provisions which make all this possible, such as coupling network signalling, must be undertaken bilaterally. In this manner, roaming additionally is possible only between different
15 PLMNs, but not between PLMNs and PSTNs (= Public Switched Telephone Networks).

SUMMARY OF THE INVENTION

20 It is the object of the invention to overcome said drawbacks. To this end, the invention provides for operators of telecommunications networks, i.e., PLMNs or PSTNs, to each conclude a bilateral roaming agreement with a global communications network - to which a satellite-communications network (= SCN) is particularly suited - and that in doing so the technical means are provided for
25 realising said agreement. By way of only one agreement, namely, by the SCN, each PLMN or PSTN, as the case may be, receives roaming facilities with all other PLMNs and PSTNs which have also concluded such an agreement with the SCN. The telecommunications network concluding an agreement with the SCN should, for the purpose of
30 realising said agreement, bring about a signalling coupling with the SCN. The SCN then provides signalling links with all telecommunications networks with which a roaming agreement has been concluded as well. There is therefore required only one signalling link with the SCN to obtain roaming with all networks connected to
35 the SCN. The invention is based on the insight that an SCN, apart from as a platform for satellite communication, due to its far-reaching global setup and arrangement, is extremely suitable as a roaming platform ("facilitator") for different PLMNs and PSTNs.

IMPLEMENTATION

Below, the invention will be further explained by reference to several figures.

A calling user of a mobile terminal has a SIM card (SIM = Secure Identification Module) in which there is programmed an IMSI (= International Mobile Subscriber Identity). The IMSI consists of 15 positions, the first three of which standard denote the country of origin of the Network Operator (= NO) of the mobile user, the fourth and fifth denote the NO of the mobile user and the remaining ten positions may be freely completed by the NO. In the IMSI of users of an NO who - according to the invention - has concluded an agreement with the SCN, the first (three) digits of the field to be freely completed constitute a VNO code (VNO = Virtual Network Operator). Said VNO code is assigned, by a control module of the SCN, to each PLMN or PSTN with which the SCN, as may be seen from an entry into a VNO-code register (= VCR), has concluded a bilateral roaming agreement. It should be noted that a VNO is understood to mean an organisation managing a communications system having one or more network working elements (e.g., an HLR [= Home Location Register]) with which the VNO may add value to a base telecommunications service. In doing so, the VNO disposes, or not, of its own network (PLMN or PSTN).

PLMN subscribers roaming on a guest PLMN

When a (calling) user switches on his mobile terminal, a link is established between the mobile terminal and a VNO base station (in this case a PLMN) where the user wants to roam. In this case, the mobile terminal transmits the IMSI number of the SIM. The VNO network attempts to analyse at least the first 8 positions, in order to determine whether it concerns a home user (client of the own PLMN) or a roaming user (client of another PLMN). If analysis on the first 8 positions is impossible, or it concerns a roaming user, it is determined, on the basis of the first 5 positions, whether a roaming agreement has been concluded between the PLMN and the SCN. If, according to the contents of the VCR, a roaming agreement does indeed exist, a request for information on the user is placed, by way of signalling, with the SCN, which carries out an analysis on the VNO code to determine to which VNO the request must be passed on. The VNO will make available the requested information, by way of signalling, to the satellite network, which passes it on to the guest PLMN. If the calling user is accepted by the guest PLMN, said

information will be stored in the home PLMN in a Home Location Register (= HLR) and in the guest PLMN in a Visiting Location Register (= VLR). The costs of the communication by way of the PLMN are charged to the calling user by the home network.

5 Said procedures are in agreement with the current procedures laid down for roaming, and both said procedures and the means serving to carry them out are generally known.

Roaming on nonmobile networks

10 A nonmobile network (PSTN) may also facilitate roaming of mobile users or clients of another PSTN, provided that said PSTN is extended with the option of being capable of identifying and recording users; to this end, it should dispose of several network elements, such as HLR, VLR, Authentication Centre, Extended memory. Identification is
15 effected by means of the IMSI on a SIM card and peripheral equipment made suitable for this purpose in the PSTN or a cordless-identification option.

PLMN- or PSTN-subscriber roaming on a PSTN

20 If a calling user ends up within the range of a transceiver station connected to a PSTN of a cordless system (e.g., a DECT [= Digital Enhanced Cordless Telecommunications]) and he disposes of a set wherein cordless communication is possible, he may make use of communication by way of the PSTN. Identification and communication
25 between the PSTN and the SCN, and between the SCN and the home PLMN, is effected in accordance with the description above. The costs of the communication by way of the PSTN are charged to the calling user by the home network.

30 Due to the absence of a base station which determines the location of the roaming user (such as in the PLMN), the location of the roaming user on the PSTN is determined on the basis of the A-number (country code + network code + subscriber number) of the terminal to which the cordless transceiver station is connected. The user is accessible on the PSTN by way of his own (mobile) telephone
35 number. *PSTN subscribers roaming on a PLMN or PSTN*

40 Wireline terminals may also make use of the aforementioned facilities. The terminal of a calling user does have to be provided with a SIM card identical to a SIM card for mobile terminals in PLMN networks. When the SIM card is inserted into a (public) terminal suitable for that purpose, identification and communication between the PSTN and the SCN, and between the SCN and the home PLMN or home

PSTN, take place in accordance with the procedure described above. Due to the absence of a base station which determines the location of the roaming user (such as in the PLMN), the location of the roaming user on the PSTN is determined on the basis of the A number (country code + network code + subscriber number) of the terminal to which the (public) terminal is connected. The user is accessible on the wireline set (PSTN) by way of his own (mobile) telephone number.

The costs of the communication by way of the PSTN are charged to the calling user by the home PSTN or home PLMN.

The enclosed figures provide an illustration of the invention. FIG. 1 shows the state of the art, in which several PLMNs conclude agreements with one another, and establish signalling channels and control modules for realising roaming facilities for the subscribers of said several PLMNs. FIG. 2 shows the architecture according to the invention, PLMNs and also PSTNs realising roaming facilities by way of a Satellite-Communications Network (= SCN) which is used here as a common roaming platform (facilitator). FIG. 3 shows a further elaboration of FIG. 2. An SCN connects several Land Earth Stations (= LESS) to one another. These are the earth stations for satellite communication. The satellites with which said earth stations are communicating have not been drawn since said satellites per se have no function in the system according to the present invention. In conformity with the invention, the SCN - apart from the standard function of facilitating communication by way of satellites - accomplishes the function of facilitating roaming for subscribers who have entirely different operator networks, PSTNs and PLMNs, as their home network, in other words, to which they are subscribing. In conformity with the invention, operators of different PLMNs or PSTNs each conclude a bilateral roaming agreement with the SCN. The technical means for realising said agreements between the several PLMNs and PSTNs, respectively, and the SCN, comprise a register, the Virtual Network Operator Code Register VCR, which is located within the SCN, and may be approached under control of a control module CTR.

The VCR may consist of one register, which may be approached and interrogated by the several LESS; if so desired, each LES may be provided with a copy VCR - to be continuously kept up to date - having (distributed) control means (CTRs). By way of one agreement with the SCN, technically to be realised by assigning, to the PLMN or PSTN, a VNO code (= VNC) and entering said VNC into the VCR, each PLMN or PSTN, respectively, entered into the VCR obtains roaming

facilities with all other PLMNs and PSTNs entered into the VCR. Upon entry into the VCR, there is also realised - under control of the control module CTR - a signalling coupling (interface) between the PLMN and PSTN entered, respectively, and the SCN. By way of the SCN, all entered PLMNs and PSTNs are then capable of exchanging signalling traffic - in this case, roaming information - with one another. This way, the SCN is used, apart from as a platform for satellite communication, by way of the VCR and the signalling couplings corresponding thereto, as an interworking platform for facilitating roaming between the several PLMNs and PSTNs.

As indicated above, the system proposed by the invention makes use of SIM cards having an IMSI adjusted for roaming. Such a SIM card is shown in FIG. 4. Standard are the country and operator codes, five characters in all. The ten remaining character positions not laid down in standards, are used in the system according to the invention for laying down, inter alia, the VNO code (three characters) of the home PLMN or PSTN, respectively.

CLAIMS

1. Communications system, comprising several communications networks, and roaming means for facilitating roaming to users on said
5 several communications networks, CHARACTERISED IN THAT the roaming means are formed by a worldwide communications network (SCN), which is in connection with each of said several communications networks (PLMN, PSTN).

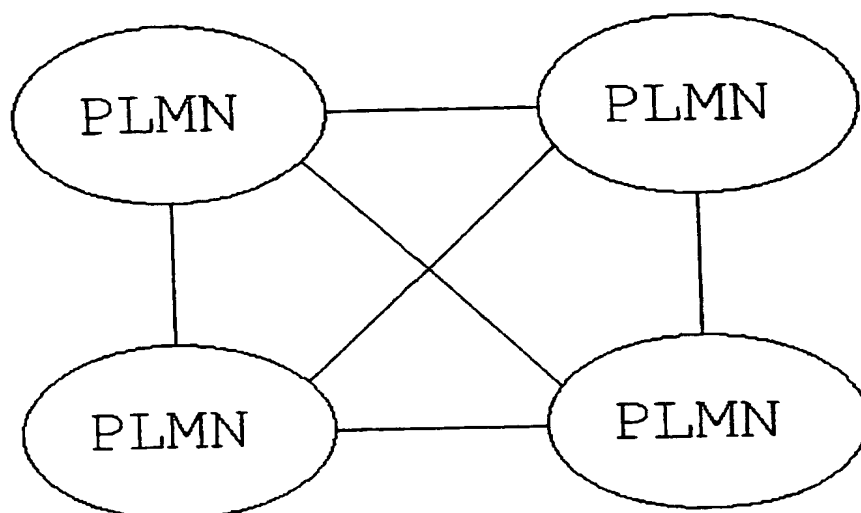
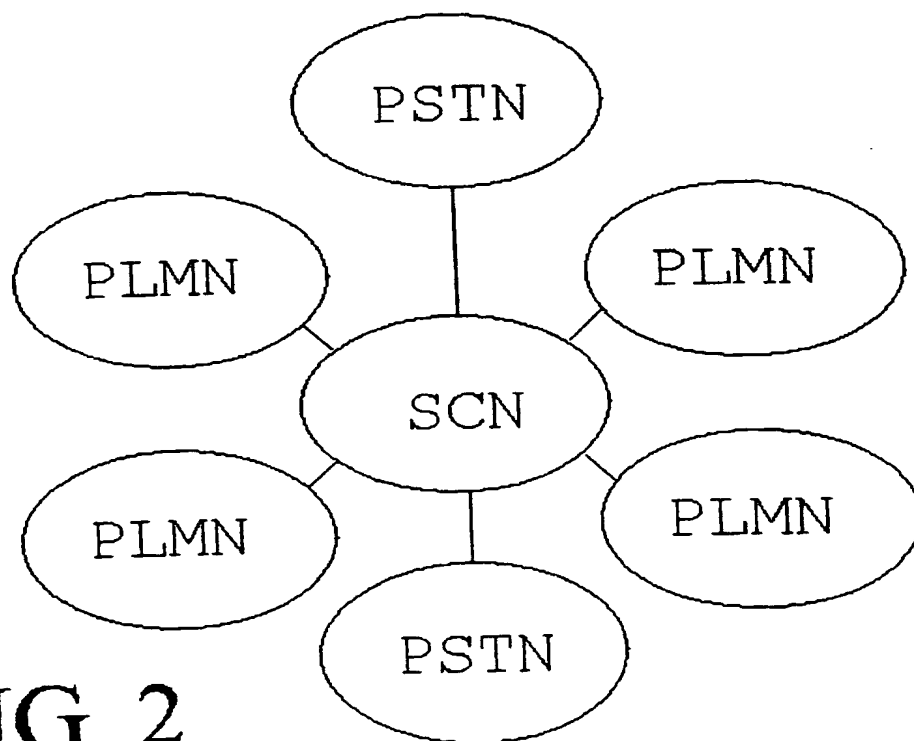
10 2. Communications system according to claim 1, CHARACTERISED IN THAT the roaming means are formed by the earth portion of a worldwide satellite-communications network (SCN), which is in connection with each of said several communications networks (PLMN, PSTN).

15 3. Communications system according to claim 1, CHARACTERISED IN THAT the worldwide communications network (SCN) assigns, to each of said several communications networks (PLMN, PSTN), a code (VNO) and enters it, under control of a control module (CTR), into a register (VCR), the worldwide communications network, under control of the control
20 module, realising mutual roaming facilities to subscribers of each of said communications networks entered into the register.

25 4. Communications system according to claim 3, CHARACTERISED IN THAT terminals of the subscribers to the communications networks (PLMN, PSTN) comprise an identification module (SIM) for reading in and passing on, to the communications system, identification codes (IMSI), a code (VNO) among them which corresponds to the code entered into the register (VCR).

30 5. Communications system according to claim 3, CHARACTERISED IN THAT the worldwide communications network (SCN) determines the location of a roaming user on a wireline network (PSTN) on the basis of the A-number of the terminal to which the terminal on the network is connected.

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**FIG. 1****FIG. 2**

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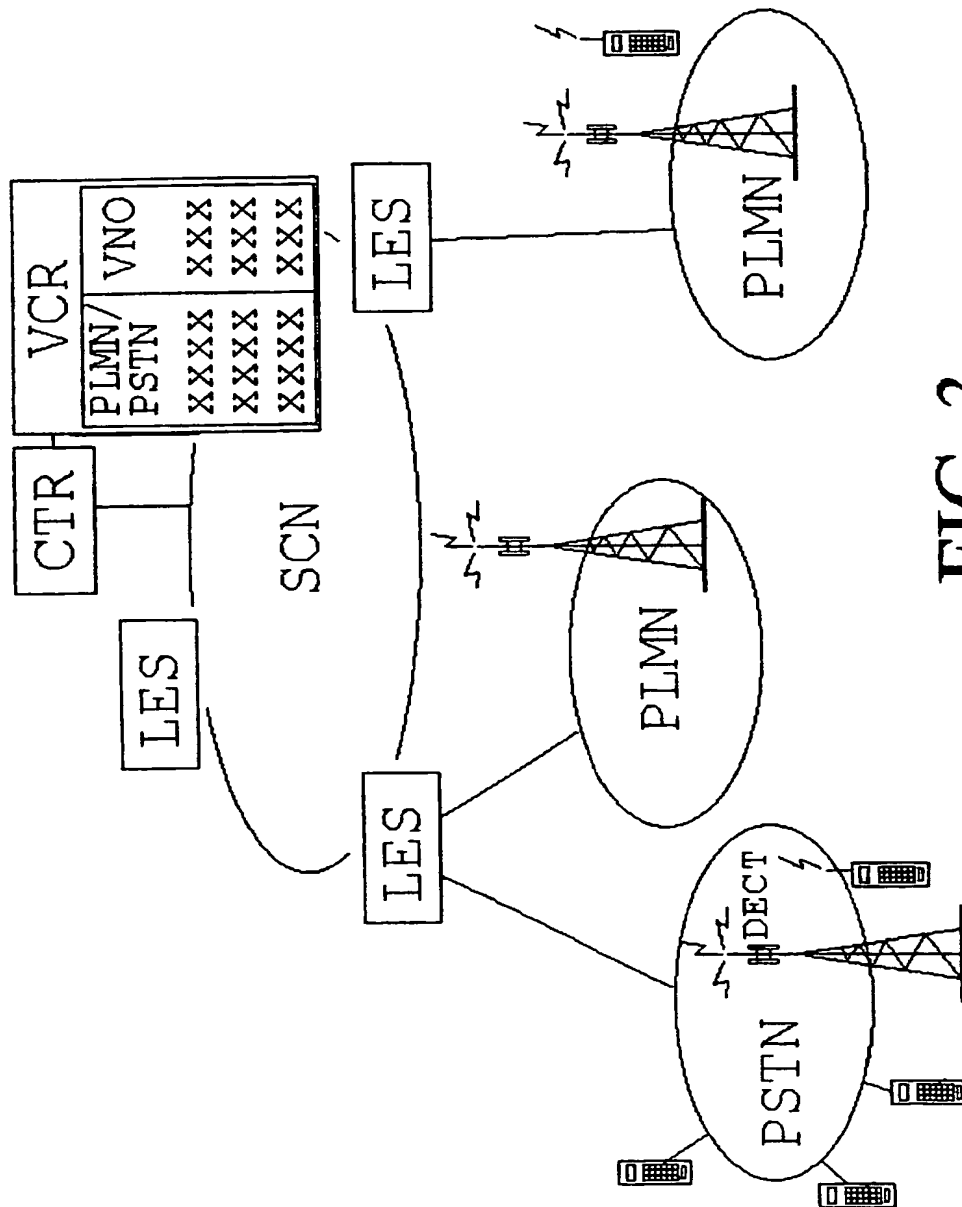
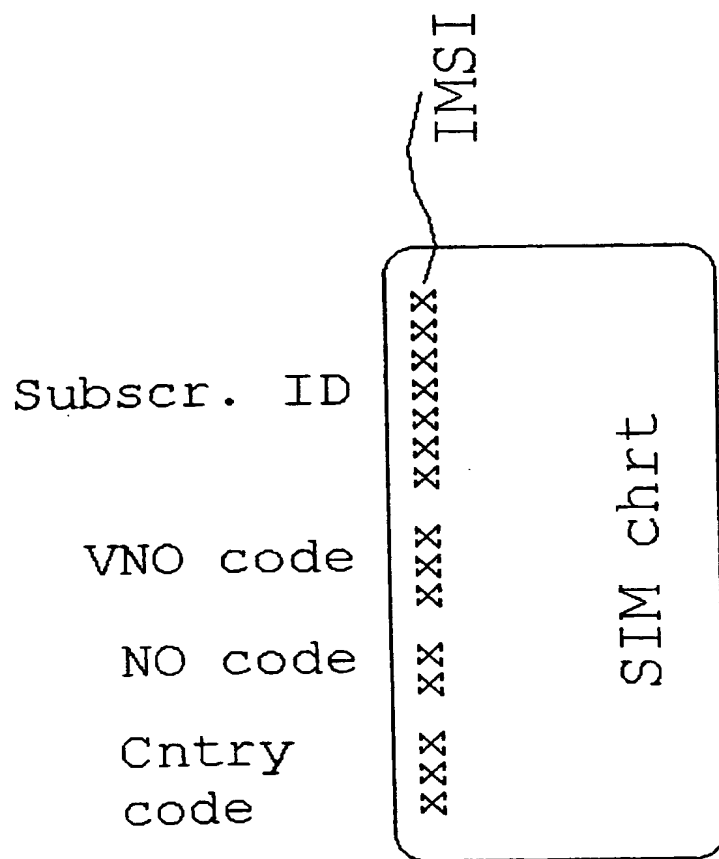


FIG. 3

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FIG. 4

INTERNATIONAL SEARCH REPORT

Inter Application No
PCT/EP 00/03096

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/38 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

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Minimum documentation searched (classification system followed by classification symbols)

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	GB 2 322 998 A (VODAFONE LTD) 9 September 1998 (1998-09-09) page 10, line 18 -page 15, line 12 page 17, line 12 - line 15 ---	1
A	EP 0 512 962 A (ERICSSON TELEFON AB L M) 11 November 1992 (1992-11-11) column 5, line 37 -column 7, line 35 column 9, line 30 - line 45 --- - / - -	3

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	EP 0 909 104 A (ASCOM BUSINESS SYSTEMS AG) 14 April 1999 (1999-04-14) column 7, line 8 -column 8, line 45 column 9, line 37 - line 45 ----	5
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